Cyathodium (Bryophyta: Hepaticae) from Chakrata, Uttarakhand, Western Himalaya, India

Uttarakhand is a hilly state in the western Himalayan region, which is rich in bryoflora[1–3]. A recent exploration of the area in October 2006, revealed the presence of many bryophyte taxa. During plant collection, an interesting *Cyathodium* was encountered which exhibits a unique feature not commonly found or reported so far.

The genus *Cyathodium* is represented by nine taxa in India, viz. *Cyathodium indicum* Udar & D. K. Singh (Western Himalaya), *C. tuberosum* Kashyap (Eastern Himalaya, Western Himalaya, South India, Punjab and Rajasthan Plains, Central India and Gangetic Plains), *C. mehranum* D. K. Singh (Eastern Himalaya), *C. aureonitens* (Griffith) Mitt. (Eastern Himalaya, Western Himalaya, South India and Gangetic Plains), *C. tuberculatum* Udar & D. K. Singh (Eastern Himalaya), *C. cavernarum* Kunze (Eastern Himalaya, Western Himalaya, South India, Central India and Gangetic Plains), *C. smaragdinum* Schiffn. (South India), *C. denticulatum* Udar & S. C. Srivast. (Eastern Himalaya) and *C. acrotrichum* Schiffn. (Eastern Himalaya)[4–8]. The genus is mainly characterized by thin, delicate, hyaline, spongy, dichotomously branched thallus. The female involucre is present on the ventral surface of the thallus towards the apex. The involucre is characteristic, being globose with a wide, rimmed mouth inhabiting usually one sporophyte. Rarely there may be two sporophytes in one involucre, although *C. mehranum* usually possesses two sporophytes per involucre[6,7].

The plants collected from Cantt Board Road, Chakrata are interestingly 'superfertile' with many involucres on a single thallus and each involucre has 1–5 sporophytes (Figures 1 *a*, *b* and 2 *a*). The plants are dioecious. The thallus is spongy without midrib, fan-shaped and 10–15 × 6–8 mm in size. The involucres are covered with stiff hairs and the mouth of the involucre is bordered by hyaline cells. The spores are spinate, 37–53 µm in diameter and the spines are 5–7.5 µm in size, acute at tips, but sometimes blunt or curved also (Figures 1 *c–q* and 2 *b* and *c*). Sporoderm exhibits minute reticulations all over the surface (Figure 2 *b* and *c*). The elaters are elongated, 665–707 × 16 µm with 2–3 spiral, thickening bands (Figure 1 *r* and *s*). All the characteristics of the plant clearly indicate its representation to *C. aureonitens* (Griffith) Mitt.[7,9]. The species is widely distributed in all the major bryo-geographical regions of the country. While it is common in Eastern Himalaya and South India, it is rare in the Western Himalayan territory[7]. It is quite interesting to observe such 'superfertile' plants, which are rare and confined to a small area, as the plants were found growing only in a small pocket on the roadside near the entry gate to Chakrata.

Specimen examined: India, Western Himalaya, Uttarakhand, Chakrata, Cantt Board Road, alt. ca. 2600 m, 26.10.2006; Asthana & party; 18773/2006 (LWU).

Ecology: The plants were found growing on the soil-covered rocks on the side of Cantt Board Road, Chakrata, in a

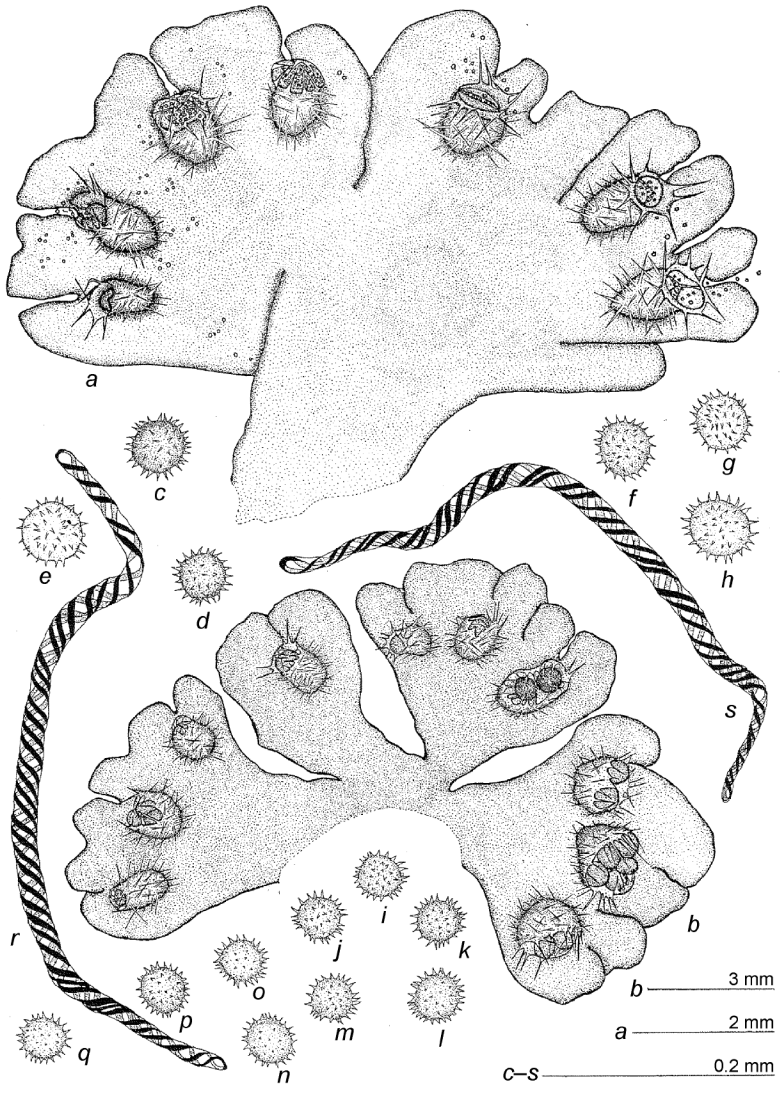

Figure 1 ***a–s.*** *Cyathodium aureonitens* (Griffith) Mitt. ***a***, Thallus with many involucres with a single sporophyte. ***b***, Thallus with 1–5 sporophytes in a single involucre. ***c–q***, Spores. ***r***, ***s***, Elaters. All figures drawn from LWU 18773/2006.

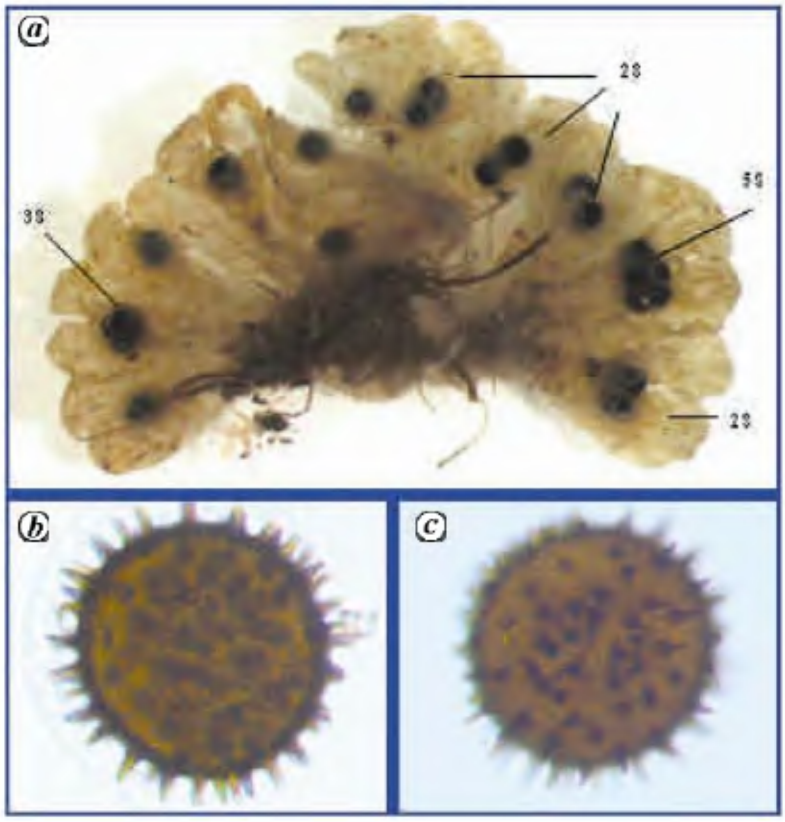

Figure 2 ***a–c.*** *C. aureonitens* (Griffith) Mitt. ***a***, Plant with many involucres having 1–5 sporophytes, ×7. ***b***, Spore in equatorial view showing spines, ×800. ***c***, Spores in surface view showing spines and minute reticulations on the sporoderm, ×800. 2S, 3S, 5S, Number of sporophytes per involucre.

small pocket in association with *Notothylas levieri*.

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